

Exhibit 1

Purpose of Experimental Special Temporary Authority

Microsoft Infrastructure Group, LLC (“Microsoft”) respectfully requests experimental Special Temporary Authority (“STA”) to test and demonstrate the efficacy and cutting-edge capabilities of Microsoft Azure’s cloud computing network for the direct reception and processing of Earth Observation (“EO”) data from the NOAA-18 satellite in connection with an ongoing Cooperative Research and Development Agreement (“CRADA”) between Microsoft and the National Oceanic and Atmospheric Administration (“NOAA”) of the United States Department of Commerce. Grant of the requested authority is in the public interest as it will allow Microsoft and NOAA to evaluate the network’s performance and validate its operational capabilities vis-à-vis NOAA’s Command and Data Acquisition ground station located in Fairbanks, Alaska.

Operational Description

Microsoft seeks an STA for a period of six months beginning on or before December 15, 2021, to permit it to operate an earth station in Quincy, Washington that will communicate with the NOAA-18 spacecraft. Microsoft is seeking an STA only for testing and demonstration purposes in support of the NOAA CRADA.

Microsoft proposes to construct one Comtech 6.1-meter antenna at its Microsoft Azure data center located in Quincy, Washington to communicate with the NOAA-18 satellite. The earth station will operate using the following frequency bands:

NOAA-18	Center Frequency (MHz)	Bandwidth (MHz)	Minimum Frequency (MHz)	Maximum Frequency (MHz)
S-Band Frequency (uplink)	2026	2	2025	2027
S-Band Frequency (downlink)	2247.5	4.55	2245.225	2249.7755
S-Band Frequency (TT&C)	2247.5	6.04	2244.5	2250.5

The NOAA-18 is a one of NOAA’s 5th generation series of Polar Orbiting Environmental Satellites (“POES”). NOAA-18 was launched in May 2005 and became operational later that year. The NOAA-18 satellite is part of NOAA’s legacy satellite fleet. The NOAA/NASA Joint Polar Satellite System is the current system.

NOAA-18 operates at an orbital altitude of 847.6 km x 867.5 km, with an orbital period of 102.12 minutes. The satellite’s inclination angle is 98.74 degrees, and its precession rate is 3.52 minutes per month. The NOAA-18 satellite carries instruments that observe Earth and provides global data for NOAA’s operational user requirements including short-, medium-and long-range weather forecasts. It tracks global weather patterns affecting the weather and climate of the U.S. and the world. Scientists use the polar orbiters’ sensors to measure ozone levels in the atmosphere and are able to detect the ozone holes.

Even though it is considered a legacy system, scientists utilize the NOAA-18 operational products in their Earth science research. They also develop new methodology to analyze the satellite data to produce new and/or improved satellite products. The satellites send millions of global measurements daily to NOAA's Command and Data Acquisition (CDA) stations in Fairbanks, Alaska, and Wallops Island, Virginia, and one location in Europe. There is also a remote CDA located in Point Barrow, Alaska providing monitoring and S-band command capability for the "blind orbits" that are often not seen by the primary Wallops and Fairbanks CDA stations.

The CDA stations receive stored Global Area Coverage and Local Area Coverage data from NOAA-18 (and other satellite spacecraft). Additionally, the CDA's may also receive real-time data from the NOAA-18 satellite when it passes by overhead.

The CDA stations transmit commands to the satellites and acquire and record environmental and engineering data from the satellites for retransmission to the Satellite Operations Control Center. All data and commands are transmitted between the Satellite Operations Control Center and the Command and Data Acquisitions via commercial communications links.

Protection of Authorized Stations

2025-2110 MHz (Uplink)

As shown in the table above, the proposed antennas will transmit in the 2025-2110 MHz frequency band. Under footnote US347 to the U.S. Table of Frequency Allocations (47 C.F.R. § 2.106), non-Federal operations in the Earth-to-space direction "may be authorized in the ... Earth exploration satellite services subject to such conditions as may be applied on a case-by-case basis," provided that "[s]uch transmissions shall not cause harmful interference to Federal and non-Federal stations operating in accordance with the Table of Frequency Allocations." Microsoft will operate the proposed earth station antennas in this frequency band on a non-interference, non-protected basis, consistent with the requirements of Section 5.84 of the Commission's rules, 47 C.F.R. § 5.84.

In addition, Microsoft has been working closely with NOAA's National Environmental Satellite, Data, and Information Service (NESDIS) to ensure coordination with Federal and non-Federal users of the band. The testing for which the STA is requested has been pre-coordinated with NASA and the Departments of Defense and Commerce. The pre-coordination is specifically for the proposed operational parameters in this STA application (radiated power of 50 Watts into a 36.5 dBi gain antenna).

2200-2290 MHz (Downlink)

The proposed antennas will receive in the 2200-2290 MHz band. The 2200-2290 MHz is not allocated to any non-Federal service (except for communications with the Tracking and Data Relay Satellite System pursuant to footnote US303). The Federal allocation includes the Earth Exploration Satellite Service. The Commission has authorized U.S. earth and space station operations in the band.

Microsoft proposes to receive in these bands on a non-protected, non-interference basis consistent with the requirements of Section 5.84 of the Commission's rules, 47 C.F.R. § 5.84. In this band, Microsoft is also working with NESDIS and other Federal agencies to ensure coordination with Federal users of the band.

Public Interest Showing

Microsoft's Azure is a leading cloud computing platform that supports more than 200 services for customers in the United States and around the world. With a growing demand for EO services such as disaster prediction and tracking, increased visibility of supply chains and economic activity, and many others, Microsoft seeks to demonstrate to commercial EO systems the benefits of direct download of EO data to the Azure Cloud for immediate processing.

The requested STA, which will become an extension of an existing CRADA with NOAA, will enable Microsoft to conduct the appropriate tests, collect critical feedback regarding the overall architecture of the proposed system, demonstrate how the network can perform the function of a CDA, and will enable NOAA to consider a new business model by which its legacy satellite fleet can cost-effectively continue to provide critical information gathered by earth orbit satellites.

Time and Date of Proposed Operation.

Microsoft requests temporary authority for six months, beginning on or before December 15, 2021 through June 15, 2022.